

Fig. 1

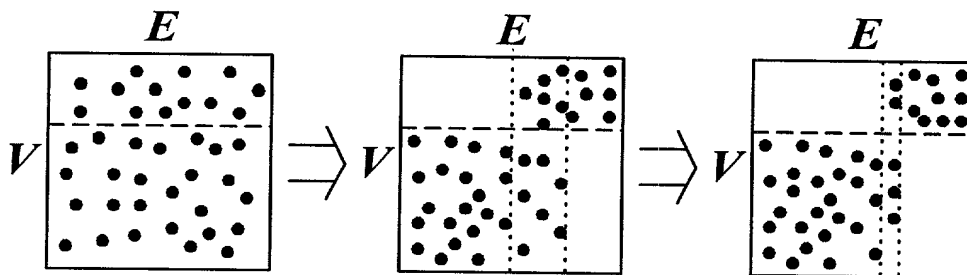


Fig. 2

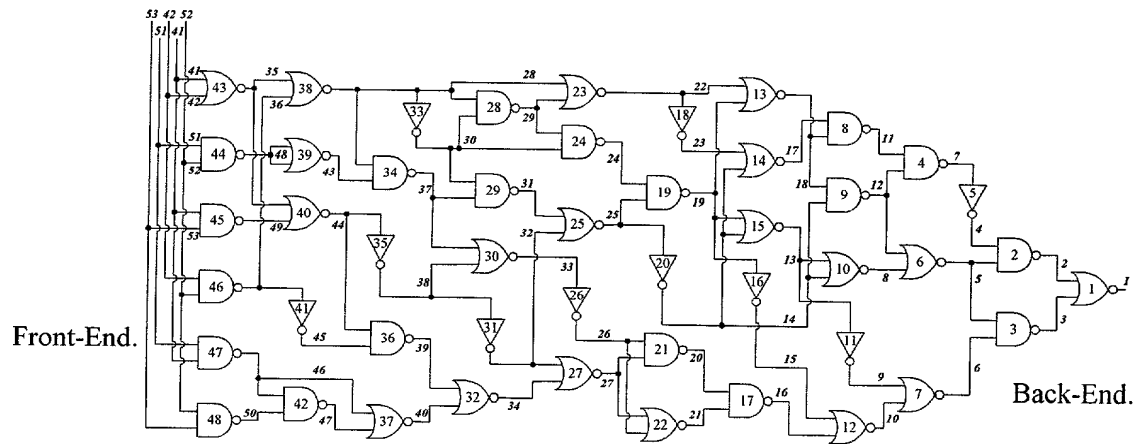


Fig. 3

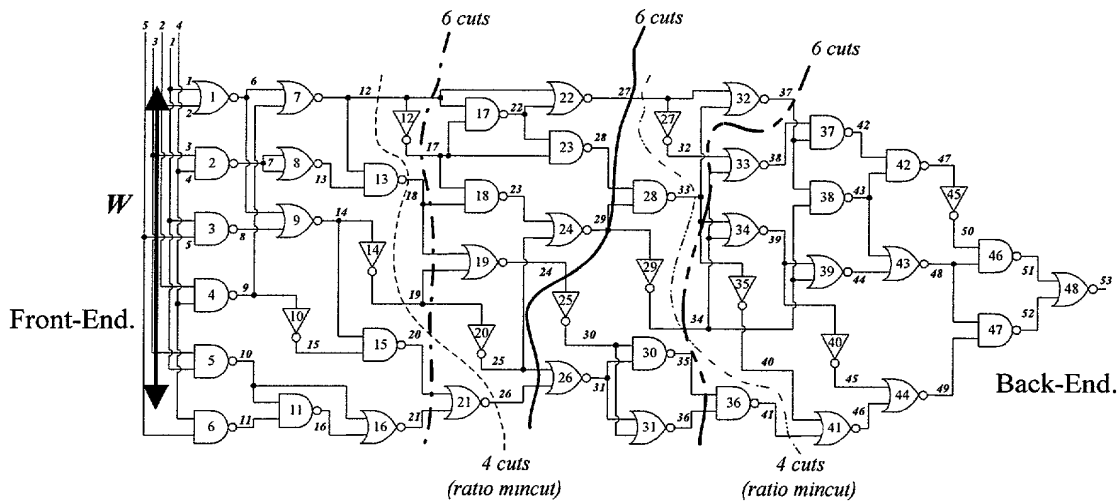


Fig. 4

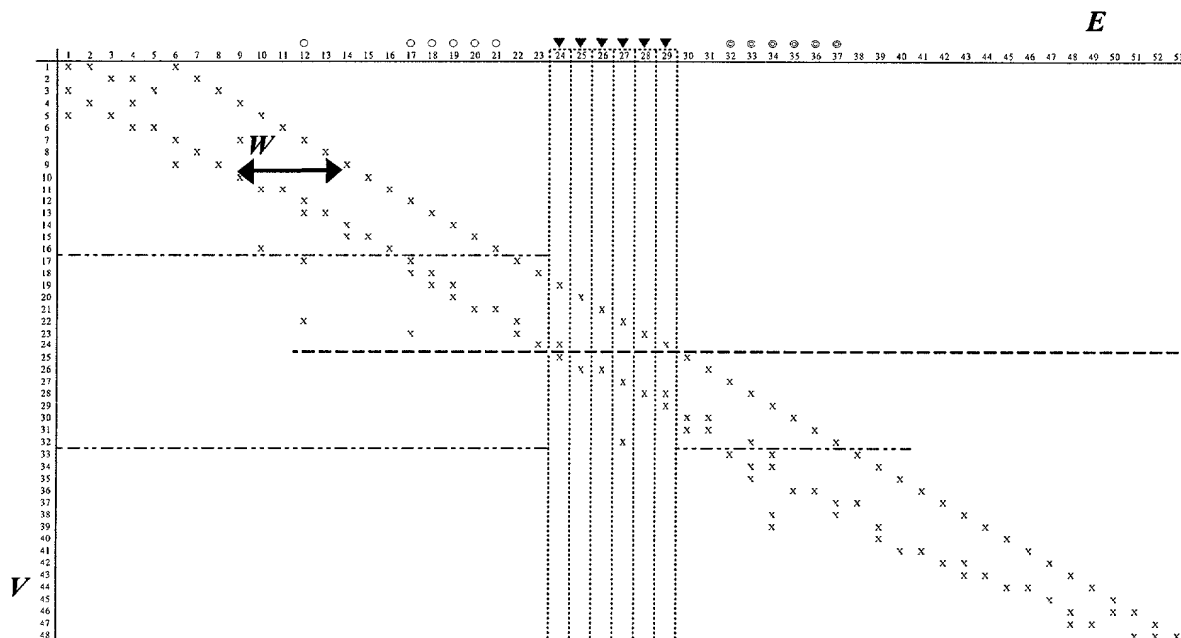


Fig. 5

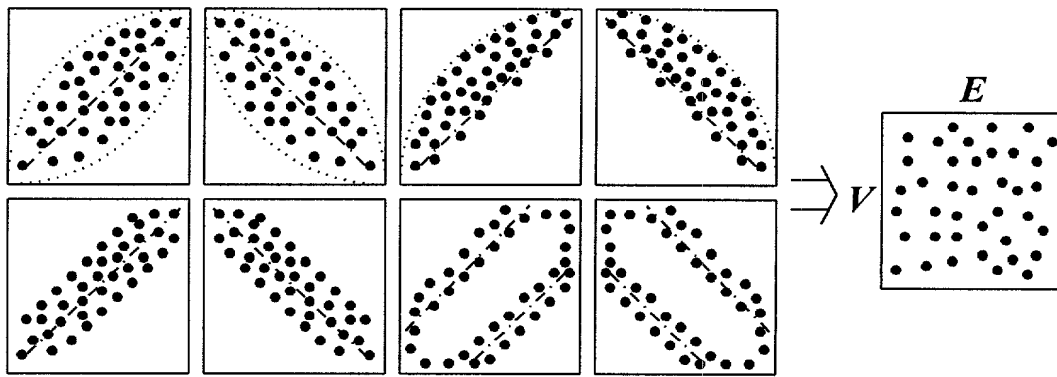


Fig. 6

```

#include <stdlib.h>
#include <stdio.h>
#include <time.h>

#define Required_Num 48
int A[Required_Num], B[Required_Num], C[Required_Num];

int main(void)
{
    int i, j, m, n, seed, non_used;
    time_t t;

    for(i=0; i< Required_Num; i++)
    { A[i] =0; B[i] =i+1; } /* For initialize */

    seed = (unsigned) time(&t); /* srand((unsigned) time(&t)); */
    srand( seed );

    printf("\nSeed %u, random numbers from 1 to %d\n", seed, Required_Num);
    for(i= Required_Num-1; i>=0; i--)
    {
        int k;
        k = (rand() % Required_Num);
        printf("%2d\t", k+1);
        if( B[k] != 0) { A[i] = k+1; B[k] = 0; }
    }
    printf("\nArray A... Non-repeated generated numbers (from back-end):\n");
    for(i=0; i< Required_Num; i++) printf("%2d\t", A[i]);

    printf("\nArray B... Not yet used numbers\n");
    j=0;
    for(i=0; i< Required_Num; i++)
    {
        if(B[i]!=0)
        { C[j]=B[i];
          printf("%2d\t", B[i]);
          j++;
        }
    }
    non_used=j;
    printf("\nInsert Sequence of "
           "Non-yet-used Numbers...\n");
    m=n=0;
    for(i=0; i<Required_Num; i++)
    {
        if(A[i]==0)
        {
            if( (j%2) == 0 )
            { A[i] = C[non_used-1-m]; m++;
            }
            else
            { A[i] = C[n]; n++;
            }
            printf("%2d\t", A[i]);
            j--;
        }
    }
    printf("\nAfter Modified...\n");
    for(i=0; i< Required_Num; i++)
        printf("%2d\t", A[i]);

    return 0;
}

```

SOME OUTPUT RESULTS:

Seed 35986, random numbers from 1 to 48
38 45 42 5 31 44 47 4 22 23
9 36 27 7 32 5 12 8 29 11
6 11 19 6 13 9 41 3 40 9
43 23 32 36 1 25 26 24 15 32
2 26 47 30 42 17 28 29

Array A... Non-repeated generated numbers (from back-end):

0 28 17 0 30 0 0 2 0 15
24 26 25 1 0 0 0 43 0 40
3 41 0 13 0 19 0 6 11 29
8 12 0 32 7 27 36 9 23 22
4 47 44 31 5 42 45 38

Array B... Not yet used numbers

10 14 16 18 20 21 33 34 35 37
39 46 48

Insert Sequence of Non-yet-used Numbers...

10 48 14 46 16 39 18 37 20 35
21 34 33

After Modified...

10 28 17 48 30 14 46 2 16 15
24 26 25 1 39 18 37 43 20 40
3 41 35 13 21 19 34 6 11 29
8 12 33 32 7 27 36 9 23 22
4 47 44 31 5 42 45 38

Seed 3350, random numbers from 1 to 48

44 13 35 29 43 22 48 37 39 41
6 39 37 4 4 46 31 38 15 27
29 40 41 17 38 32 14 22 7 8
32 23 18 27 5 11 26 1 47 44
30 28 44 19 37 34 48 34

Array A... Non-repeated generated numbers (from back-end):

0 0 34 0 19 0 28 30 0 47
1 26 11 5 0 18 23 0 8 7
0 14 32 0 17 0 40 0 27 15
38 31 46 0 4 0 0 6 41 39
37 48 22 43 29 35 13 44

Array B... Not yet used numbers

2 3 9 10 12 16 20 21 24 25
33 36 42 45

Insert Sequence of Non-yet-used Numbers...

45 2 42 3 36 9 33 10 25 12
24 16 21 20

After Modified...

45 2 34 42 19 3 28 30 36 47
1 26 11 5 9 18 23 33 8 7
10 14 32 25 17 12 40 24 27 15
38 31 46 16 4 21 20 6 41 39
37 48 22 43 29 35 13 44

Fig. 7

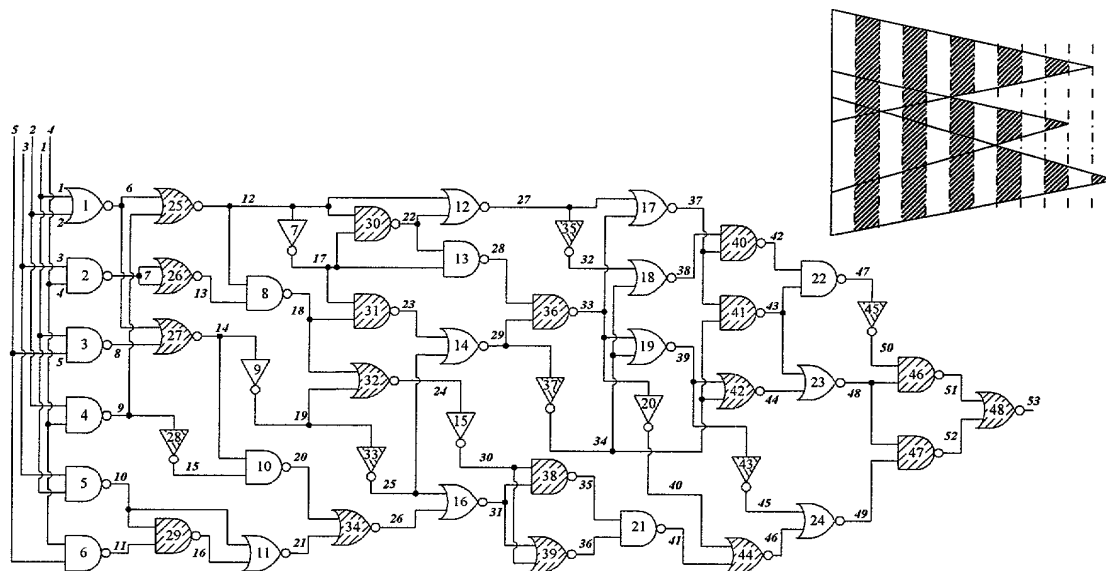


Fig. 8A

Seed 34731, random numbers from 1 to 24									
1	10	21	8	17	6	4	7	22	15
9	9	12	13	12	19	6	4	10	21
23	11	4	24						
Array A... Non-repeated generated numbers (from back-end)									
24	0	11	23	0	0	0	0	19	0
13	12	0	9	15	22	7	4	6	17
8	21	10	1						
Array B... Not yet used numbers									
2	3	5	14	16	18	20			
Insert Sequence of Non-yet-used Numbers...									
2	20	3	18	5	16	14			
After Modified...									
24	2	11	23	20	3	18	5	19	16
13	12	14	9	15	22	7	4	6	17
8	21	10	1						

Seed 34797, random numbers from 25 to 48									
33	41	28	40	33	45	36	48	44	39
27	47	35	37	30	31	44	33	46	25
35	28	30	46						
Array A... Non-repeated generated numbers (from back-end)									
0	0	0	0	25	46	0	0	31	30
37	35	47	27	39	44	48	36	45	0
40	28	41	33						
Array B... Not yet used numbers									
26	29	32	34	38	42	43			
Insert Sequence of Non-yet-used Numbers...									
26	43	29	42	32	38	34			
After Modified...									
26	43	29	42	25	46	32	38	31	30
37	35	47	27	39	44	48	36	45	34
40	28	41	33						

Fig. 8B

0. **Initialize:** mapping (V, E) pairs to V-E plain,
confirm the (V, E) pair distributed condition under nearly Max-cut reservation
and may randomize the node number order.

1. Phase One: basic four steps.

E N E N
(B) (R) (T) (L)

E: Edge Radix Sort
N: Node Radix Sort

(B): Bottom-side base
(R): Right-side base
(T): Top-side base
(L): Left-side base

2. Phase Two Begins: different additional steps can be choiced.

2A.

N	E	N
(R)	(T)	(L)

N	E	N
(R)	(T)	(L)

 • • •

2B.

N	E	N
(R)	(T)	(L)

N	E	N
(R)	(B)	(L)

N	E	N
(R)	(T)	(L)

N	E	N
(R)	(B)	(L)

 • • •

2C.

N	E	N	E	E	N	E	N	N	E	N	E	E	N	E	N
(R)	(T)	(L)	(B)	(T)	(L)	(B)	(R)	(L)	(B)	(R)	(T)	(B)	(R)	(T)	(L)

N	E	N	E	E	N	E	N	N	E	N	E	E	N	E	N
(R)	(T)	(L)	(B)	(T)	(L)	(B)	(R)	(L)	(B)	(R)	(T)	(B)	(R)	(T)	(L)

 • • •

2D.

E	N	E	N
(B)	(R)	(T)	(L)

E	N	E	N
(B)	(R)	(T)	(L)

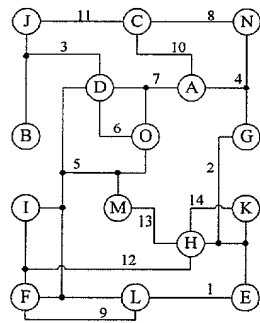
 • • •

2E. Some other recurring orders.

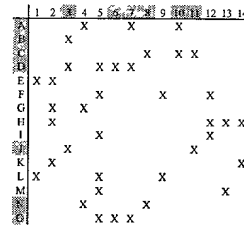
2F. Some other clustering techniques.

※When every sort step completed, record nodes set, and if node set no more change, halt the procedures.

Fig. 9



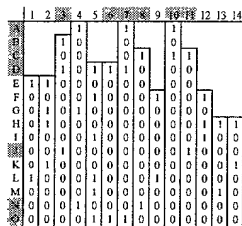
initialize
mapping
to
V-E plain



A 14 edges / 15 nodes example.

Confirm the distributed condition.

Fig. 10A



Sort step 1
from edge view
(bottom-side base)

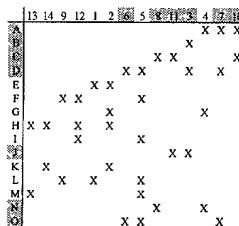
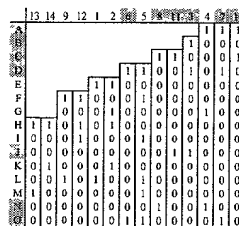
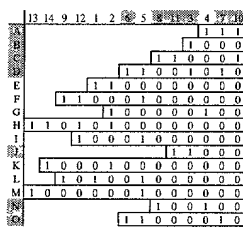


Fig. 10B



Sort step 2
from node view
(right-side base)

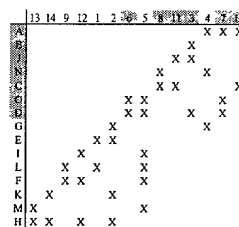
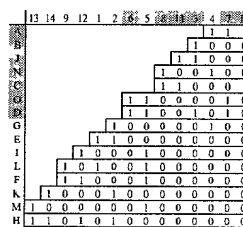


Fig. 10C

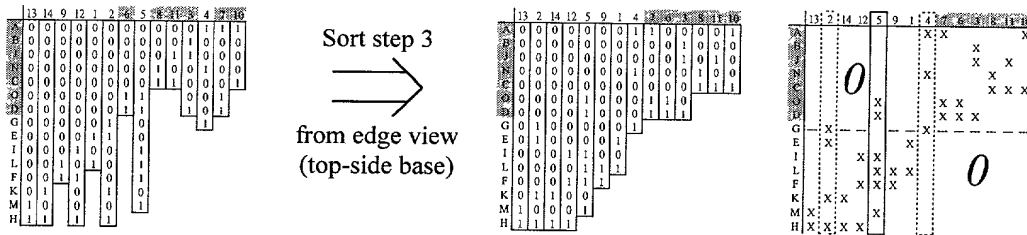


Fig. 10D

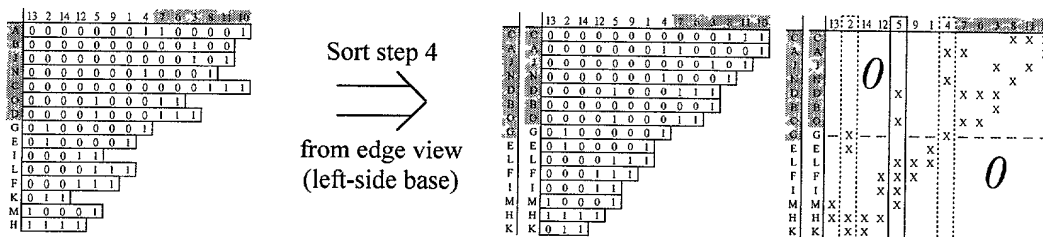


Fig. 10E

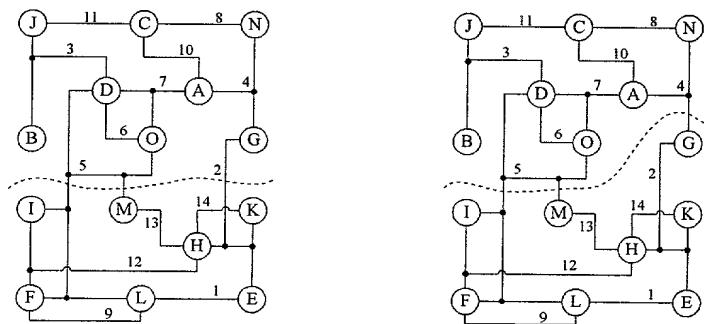


Fig. 10F

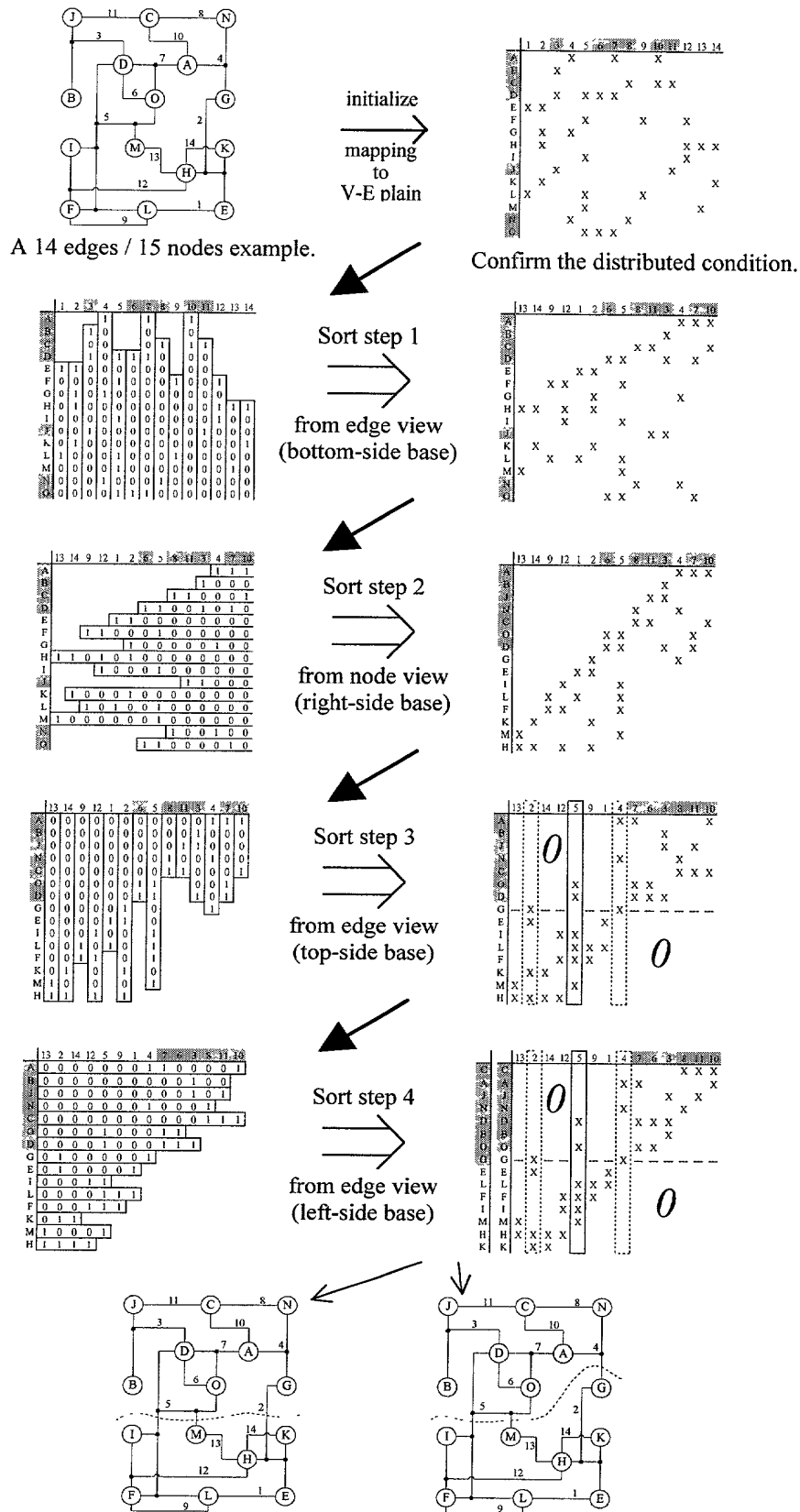


Fig. 11

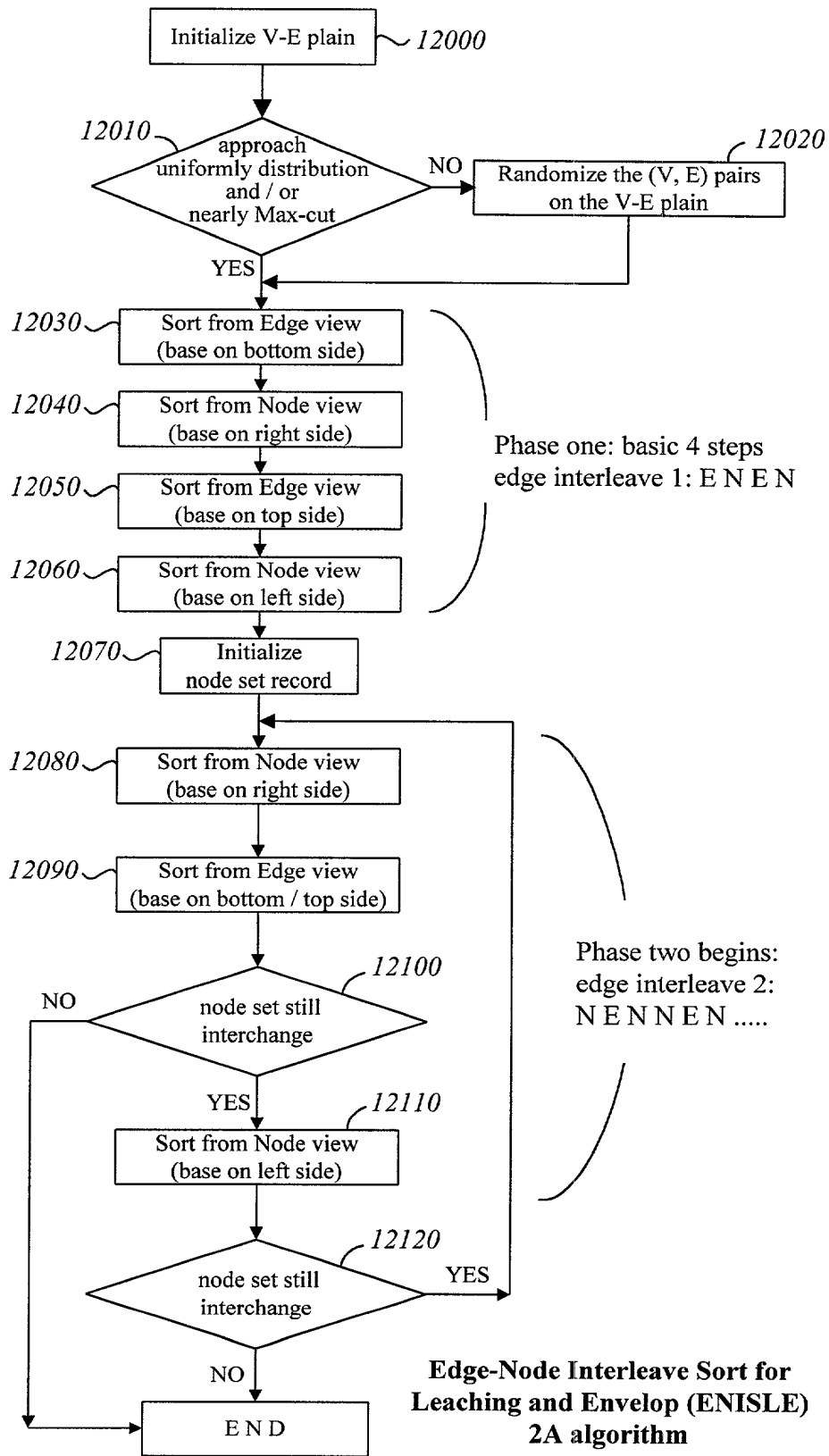


Fig. 12

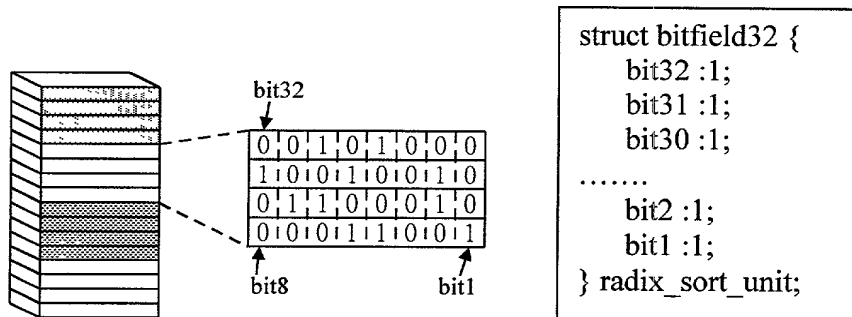
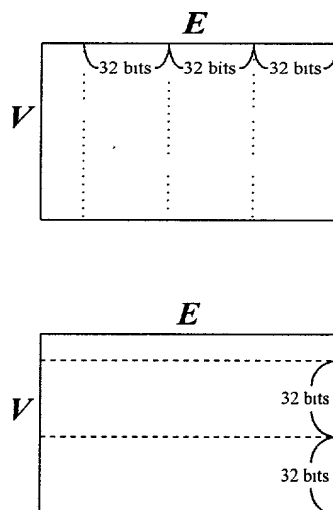


Fig. 13



Radix Sorting (LSD) Example:

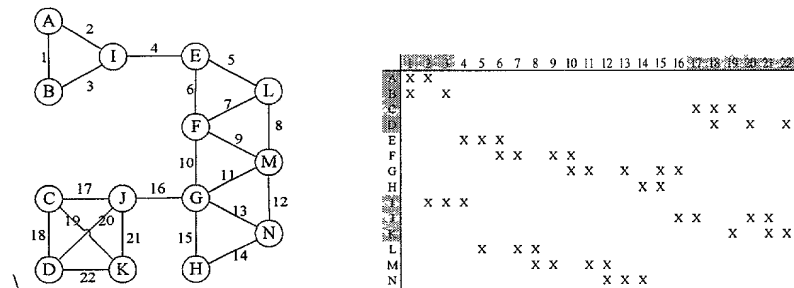
232, 321, 213, 231, 111, 112, 132, 123, 221
1S → 321, 231, 111, 221
2S → 232, 112, 132
3S → 213, 123

321, 231, 111, 221, 232, 112, 132, 213, 123
10S → 111, 112, 213
20S → 321, 221, 123
30S → 231, 232, 132

111, 112, 213, 321, 221, 123, 231, 232, 132
100S → 111, 112, 123, 132
200S → 213, 221, 231, 232
300S → 321

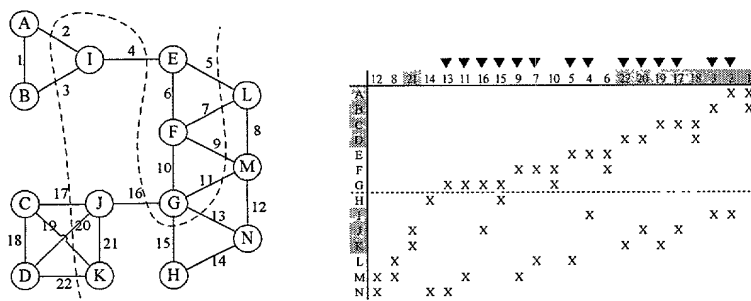
Output: 111, 112, 123, 132, 213, 221, 231, 232, 321

Fig. 14



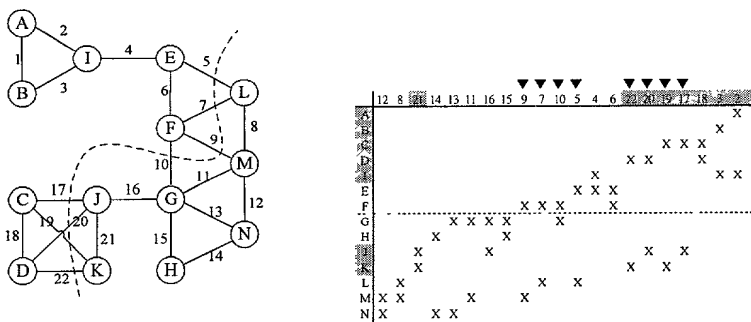
Initialize the V-E Plain.

Fig. 15A



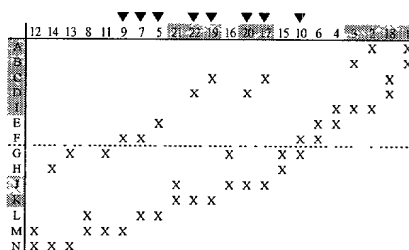
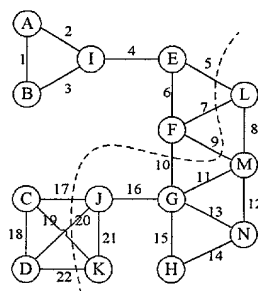
Step 1, cut numbers: 14.

Fig. 15B



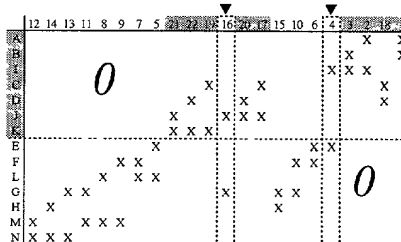
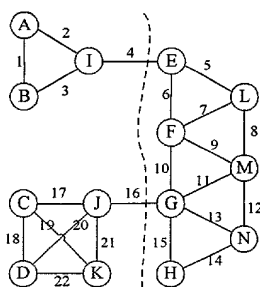
Step 2, cut numbers: 8.

Fig. 15C



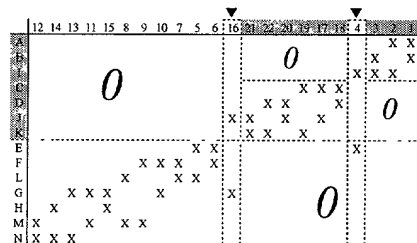
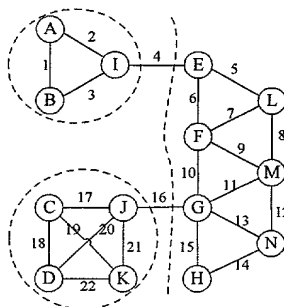
Step 3, 4, cut numbers: 8.

Fig. 15D



Step 5, cut numbers: 2.

Fig. 15E



Step 6, cut numbers: 2.

Fig. 15F

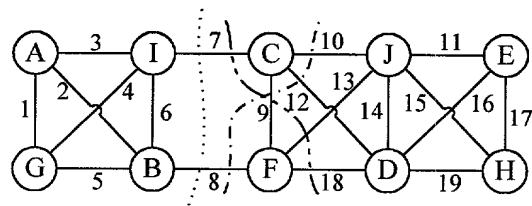


Fig. 16

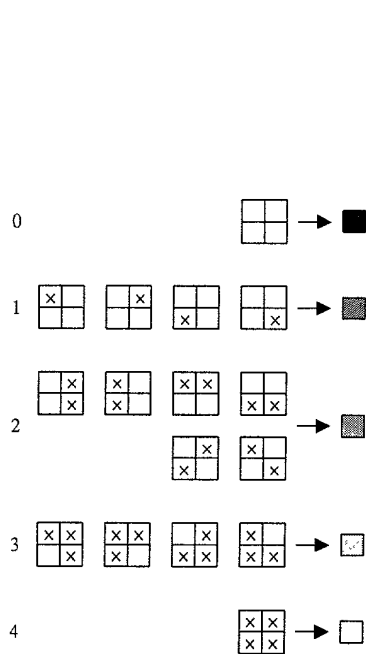


Fig. 17A

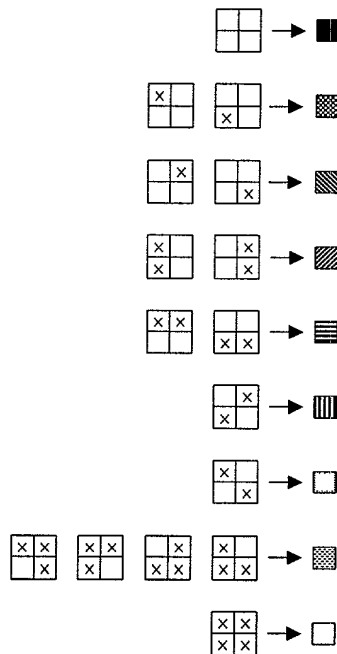


Fig. 17B

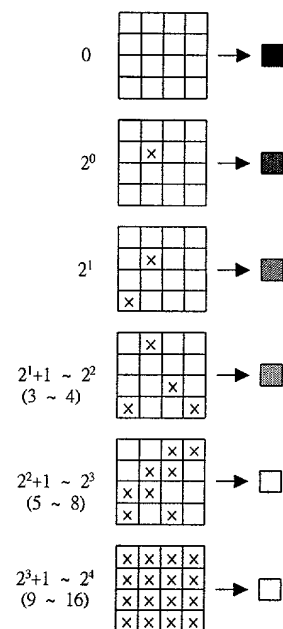
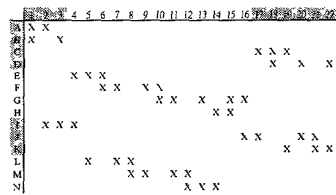
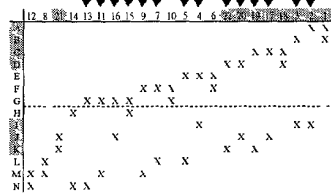


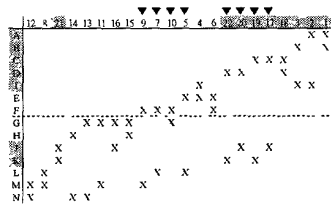
Fig. 17C



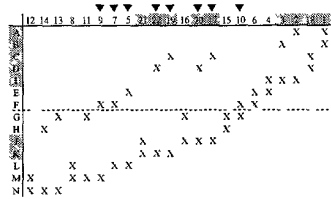
Initialize.



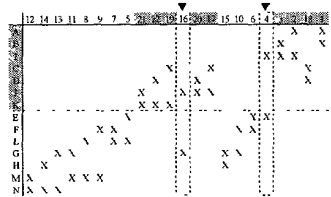
Step 1.



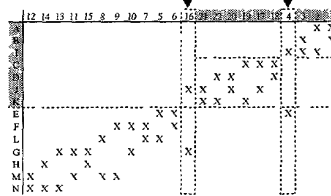
Step 2.



Step 3, 4.



Step 5.



Step 6.

Fig. 18.

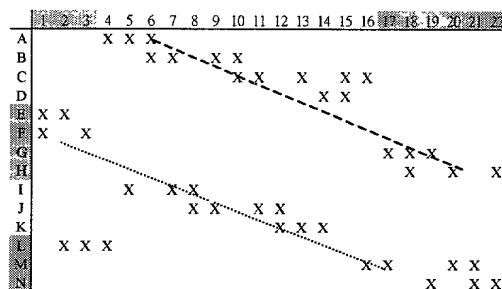
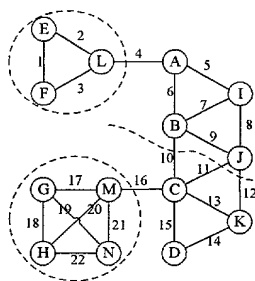


Fig. 19

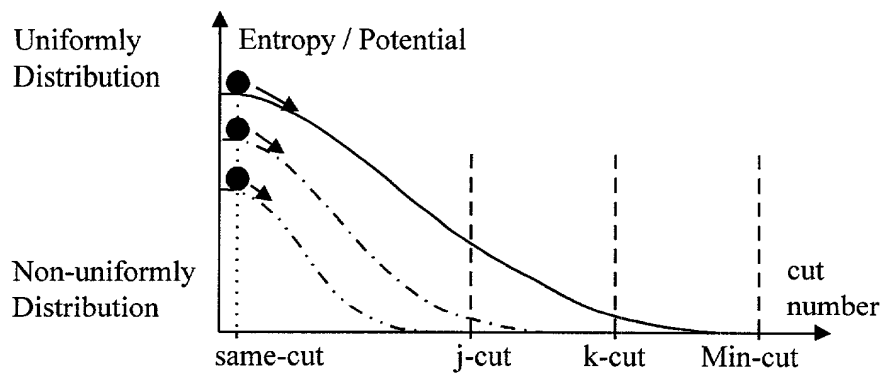


Fig. 20A

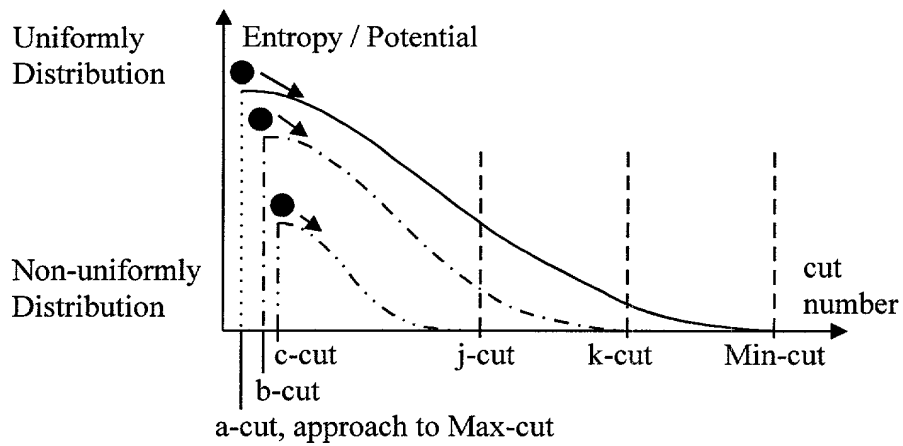


Fig. 20B

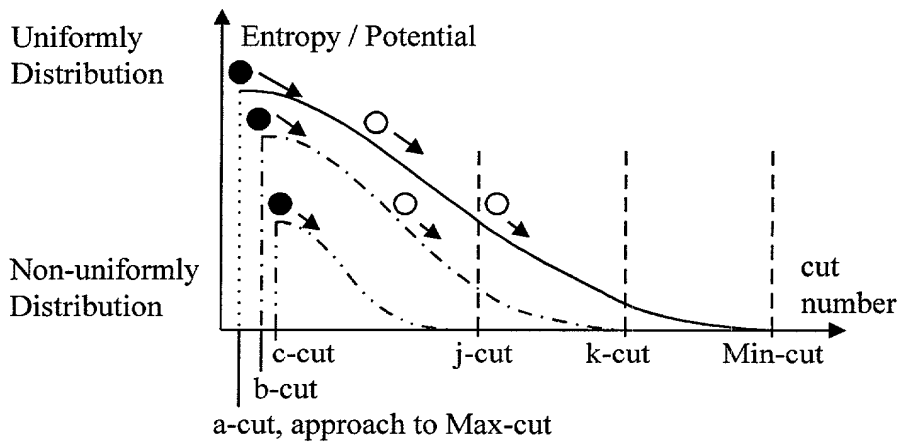


Fig. 20C